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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,065	09/10/2003	Ruth E. Shefer	6931	3821

7590 12/15/2004  
Samuels, Gauthier & Stevens LLP  
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EXAMINER
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SONG, HOON K

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/659,065

Applicant(s)

SHEFER ET AL.

Examiner

Hoon Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 and 27-34 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 6, 14 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Meccariello et al. (US 5003572)

Regarding claims 1, 14 and 24 Meccariello teaches an apparatus, comprising:  
an X-ray tube (12) that emits X-rays in response to a current control signal (18);  
an X-ray detector (44) that detects X-rays emitted from said X-ray tube (12) and provides a detected X-ray signal indicative thereof; and

a control system (60) that receives said detected X-ray signal and provides said current control signal (18).

Regarding claims 2 and 6, Meccariello teaches said x-ray detector comprises a photodiode or electron multiplier (column 4 line 15 and 27)

Claims 32 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Heinze et al. (US 4639943)

Regarding claim 32, Heinze teaches an apparatus, comprising:  
means (1) for generating X-rays in response to a control signal (25);  
an X-ray detector (8) that senses said X-rays and provides a detected X-ray signal indicative thereof; and

a control system (25) that receives said detected X-ray signal (29) and a reference X-ray signal (second regulating stage), and provides said control signal.

Regarding claim 34, Heinze teaches said reference signal is a time varying signal (column 3 line 1).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 11, 13, 15-18 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinze et al. (US 4639943) in view of Meccariello et al. (US 5003572).

Regarding claims 1 and 14, Heinze teaches an x-ray source, comprising:  
an X-ray tube (1) that emits X-rays in response to a control signal;  
an X-ray detector (16) that detects X-rays emitted from said X-ray tube (1) and provides a detected X-ray signal indicative thereof (column 2 line 62); and  
a control system (second regulating stage) that receives said detected X-ray signal and provides said control signal.

However Heinze fails to teach that the control signal is current control signal.

Meccariello teaches a dose controller (60) which controls either voltage, pulse width or current (column 3 line 45).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the control system of Heinze with the current control as taught by Meccariello, since the current control of Meccariello would provide desired brightness and eliminate the deviation of the actual brightness.

Regarding claims 2-7, 11, 13, 15-18, 22-23 and 30, Heinze fails to teach the specific type of x-ray detector.

An x-ray detector having a photodiode, pin diode, ionization detector, scintillation detector, electron multiplier or charge coupled device (segmented x-ray detector) is known in the art to detect x-rays.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the system of Heinze with the known type of x-ray detectors since each of the type of detectors would provide their benefit over the other such as manufacturing cost, overall size and accuracy.

Claims 8-10, 12, 19-21, 24-25 and 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinze as modified by Meccariello as applied to claim 1 above, and further in view of Turner et al. (US 6661876B2).

Regarding claims 8, 19 and 24-25, Heinze teaches the detector is at proximate distance to the x-ray tube but fails to teach the x-ray tube has an x-ray window.

Turner teaches a x-ray window (column 2 line 61).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the x-ray source of Heinze as modified by Meccariello with the

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window as taught by Turner, since the window of Turner would secure the x-ray tube (figure 3).

Regarding claims 9 and 20, Heinze as modified by Meccariello fails to teach said X-ray detector partially covers said X-ray window.

However it would have been obvious to one of ordinary skill in the art at the time of the invention to partially cover the window so that x-ray path interruption by x-ray detector will be minimized while provide sufficient x-ray detecting information to provide the control signal.

Regarding claims 10 and 21, Heinze as modified by Turner teaches said x-ray tube comprises an x-ray window through which the x-ray pass, wherein said x-ray detector comprises an x-ray transmissive device that completely covers said x-ray window to sense x-ray flux passing through said x-ray window (figure 1).

Regarding claim 12, Heinze as modified by Turner teaches said x-ray tube comprises an x-ray window through which the x-ray pass, wherein said x-ray window comprises an outside surface, and x-ray detector is located at a distance up to about 3 mm from said outside surface of said x-ray window (proximate distance, column 2 line 61)

Regarding claims 27, 28 and 31, Heinze as modified by Meccariello fails to teach that the x-ray source is a handheld, battery powered having target window device.

Turner teaches a handheld, battery powered, target window x-ray source.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the x-ray source of Heinze as modified by Meccariello with the

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handheld, battery power having target window x-ray source as taught by Turner, since the x-ray source of Turner would improve portability of the system and would prolong the life of the x-ray source.

Regarding claim 29, Turner teaches the x-ray device is configured for use as an x-ray fluorescence analytical instrument (column 5 line 29).

***Allowable Subject Matter***

Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art fails to teach the x-ray detector is located directly adjacent to inner surface of the window as claimed in dependent claim 26.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is (571) 272-2494. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272 - 2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HKS

12/8/04  
HKS



DAVID V. BRUCE  
PRIMARY EXAMINER